

NEW AND OTHERWISE NOTEWORTHY PLANTS OF
THE SOUTHWEST

CORNELIUS H. MULLER

The Division of Plant Exploration and Introduction of the Bureau of Plant Industry for two seasons has been collecting plants, used by the Indians of Nevada, as a part of an undertaking to determine possible new agricultural crops. The collections made by the field staff of this Indian Plant Project contain many very interesting species. Outstanding among them is a new species of *Alnus* which differs so markedly from all previously known species of that genus, though still obviously congeneric with them, that it must be regarded as representing a new section of the genus.

ALNUS Gaertn., sect. *Pycnantha* C. H. Mull. sect. nov. Amentae masculae et femineae saepe ex eadem gemma enatae; amentae masculae perpetuo densae, axe rigido haud pendulo, bracteis cum floribus deciduis.

Shrubs or small trees with the characters of the genus except that the staminate and pistillate catkins frequently come from the same bud, bracts of staminate catkins congested, rachis stiff, never pendulous, bracts deciduous with the flowers.

The type of this section is the following new species. The section is probably most closely related to the section *Alnobetula* W. D. Koch (Winkler, H.; Engler, Pflanzenreich 19. IV. 61: 102. 1904) from which it is readily distinguished by its stiff staminate catkins and the tendency of both male and female racemes to arise from a single bud. The facts that the latter character is not totally constant, that a similar tendency may occasionally be seen in species of other sections of the genus, and that no profound floral differences could be recognized indicate that this plant cannot be held generically distinct from *Alnus*. The nature of the inflorescence is the basis upon which the genus is divided into sections by Winkler (l.c.).

The author wishes to acknowledge his indebtedness to Mr. B. Y. Morrison for the drawings of *Alnus*.

Alnus densiflora sp. nov. Frutex; ramuli puberulentes annotini glabrati; gemmae falcatae, stipitatae 7 mm. longae; folia ovata vel elliptica, obtusa vel rare acuta, cordata vel rare cu-

EXPLANATION OF THE FIGURES. PLATE 12.

PLATE 12. *Alnus densiflora* C. H. Mull. Fig. A. Habit sketch of a branch (from the type specimen), $\times 1$: 1, young staminate aments; 2, young pistillate aments; 3, mature staminate aments; 4, mature pistillate aments; 5, bud. Fig. B. Apical or outer view of a mature staminate bract, $\times 6$. Fig. C. Adaxial view of a mature staminate bract, $\times 6$. Fig. D. Abaxial view of a mature pistillate bract, $\times 6$. Fig. E. Adaxial view of a mature pistillate bract, $\times 6$. Fig. F. Surface view of a fruit, $\times 6$.



PLATE 12. *ALNUS DENSIFLORA* C. H. Mull.

neata, grosse duplicati-serrata, supra sparse pubescentia, subtus dense viscido-pubescentia vel fere glabrata; petioli 10–15 mm. longi, 1–1.5 mm. diametro, pubescentes; amentae masculae cylindricae, 25 mm. longae, 7 mm. diametro; perianthium 4-partitum, segmentis inaequalibus; amentae femineae ovoidae vel ellipticae, 10–15 mm. longae, 7–10 mm. diametro; nuces late cuneato-obovatae apice rotundatae basi truncatae alatae, ala acuta quam corpore angustiore.

Shrub 2–5 m. tall, trunk and branches short, bark brown with gray scales; twigs rather stout (2–3 mm. in diameter), shallowly round-fluted, at first reddish-brown and minutely densely puberulent with simple, stellate hairs, becoming glabrous the second year and covered with conspicuous gray wax but deep reddish-brown where abraded, lenticels few, large, prominent; buds falcate, stipitate, about 7 mm. long, densely puberulent like the twigs; leaves ovate to elliptic, apices rounded to obscurely acute, bases rounded, cordate or rarely cuneate, margins coarsely double-serrate save at the entire base, teeth rounded or finally minutely acuminate, upper surface dull green, minutely sparse-pubescent, lower surface densely viscid-ferruginous pubescent especially along midrib and principal veins or nearly glabrate save in protected places, the apparently denuded lower surface microscopically sericeous; lateral veins 9 or 10 on each side of the midrib, strictly parallel to one another, invariably passing into the major teeth (or lobes); petioles about 10–15 mm. long, 1.5 mm. in diameter, somewhat persistently pubescent; inflorescence of male and female catkins mixed in a simple panicle or borne in separate but closely proximal racemes, appearing terminally in summer and reaching anthesis the following summer in a lateral position on the stem and maturing in early autumn; racemes (including catkins) 3–6 or 7 cm. long, bearing 2–5 catkins on naked branches 1–6 mm. long articulated upon the naked peduncle, male catkins reaching almost full size the first summer, female catkins remaining minute and acute until the following spring; male catkins short and thick at maturity (about 25 mm. long, 7 mm. in diameter), the rachis inflexible, not elongating, the spike remaining dense through anthesis, bracts green turning brown as they dry at maturity, deciduous from the persistent brown rachis with the three staminate flowers still attached, bracts 5-parted at apical end, the shield-like middle lobe abaxial, flattened, the four apices of the adaxial lobes projecting from behind it; male flowers 4-merous, perianth parts fused only at base, adbracteal lobes longer than adracheal ones, brown like the bracts; female catkins short, ovoid or elliptic, about 10–15 mm. long, 7–10 mm. in diameter, bracts rather deeply 5-lobed, as in the staminate bracts the abaxial is in the middle and somewhat dominant over the other four which occur in one row and are essentially alike; nuts broadly cuneate-obovate, apex rounded,

base truncate, margins acutely winged on each side with pithy inflated wings about two-thirds the width of the seed, the whole about 3 mm. long, 2 mm. wide, styles persistent, about 0.5–0.75 mm. long.

NEVADA. Storey County: southwest of Virginia City on the Jumbo Canyon Road, September 3, 1937, *R. A. Allen 514* (type, Herbarium of the National Arboretum 39964). "Shrub, 6–16 ft., brown bark with gray scales, short trunk and branching. Uncommon." The specific name *densiflora* was chosen to call attention to the compact nature of the staminate catkins.

A specimen of *Lycium* collected ten miles northeast of Schurz, between Rawhide and Schurz, Mineral County, Nevada, May 20, 1937, *E. V. A. Murphey 24* (in Herbarium of the National Arboretum), has been identified as *L. Shockleyi* Gray (Proc. Amer. Acad. 22: 311. 1887). Schurz and Rawhide lie in the north of Mineral County, while the type locality of *L. Shockleyi* is Candelaria in the south of the same county.

Hitchcock, in his monograph on American species of *Lycium* (Ann. Mo. Bot. Gard. 19: 179–374. 1932), reduces *L. Shockleyi* to synonymy under *L. Cooperi* Gray, pointing out that the calyx character of *L. Shockleyi* which is used to separate that species from *L. Cooperi* is not constant. He does not mention the sessile flowers solitary in the leaf fascicles, the very short free portions of the filaments, and the fruit included in the calyx, all pointed out in Gray's original description of *L. Shockleyi*. The ovules are always two in each cavity of the ovary, a fact which was not mentioned by Gray or Hitchcock. None of these characters is to be found in *L. Cooperi*. In Hitchcock's key *L. Shockleyi* would lead one to *L. Cooperi* or, if the calyx lobes should be a bit shorter than usual, to *L. verrucosum* Eastw. The coincidence of filaments adnate nearly their whole length in both *L. Shockleyi* and *L. verrucosum* is of no phylogenetic significance, as is evidenced by the total dissimilarity of vegetative and other flowering characters in the two species. *Lycium Shockleyi* does not satisfactorily negotiate the choice between the secondary divisions of Hitchcock's key, "Calyx lobes 2/3 as long . . . as the tubular portion, etc." and "Calyx lobes less than 2/3 as long as tube, etc." It must be regarded as fitting into the first category.

There follows an amplified description of *Lycium Shockleyi* based upon the Murphey specimen.

LYCIUM SHOCKLEYI Gray in Proc. Amer. Acad. 22: 311. 1887. *L. Cooperi* Hitchcock in Ann. Mo. Bot. Gard. 19: 305. 1932, *pro parte*, not Gray.

Low shrubs with somewhat strict stems 0.4–0.6 m. tall consisting of 1–5 internodes, arising at intervals from a rhizome, rather densely alternately branched above, bearing numerous slender, sharp, leafy spines 10–40 (usually about 20) mm. long,

bark shredding, very light tan with very white outer layer, in age becoming flecked with minute black spots (apparently the growth of some micro-organism on the very surface); leaves in alternate fascicles of 4-10 (usually 6), oblanceolate or spatulate, 6-13 mm. long, 2-3 mm. broad, apex broadly rounded, base gradually narrowed to form a slender petiole (indistinguishable from blade), thick, succulent but essentially flat, the midrib occasionally prominent, both surfaces very sparingly stipitate-glandular (hairs of the type of *L. Parishii* or *L. exsertum*, the difference not distinguishable in dried material); flowers solitary in axils of principal leaves, occupying a central position in the axillary fascicle, sometimes apparently two, then occupying separate leaf fascicles at the same node, the flowering fascicles always on old wood, at either spine-bearing or naked nodes; pedicels very short, rarely over 0.5 mm. long; calyx oblong, glabrate, tube about 4 mm. long, 2-2.5 mm. wide at anthesis, its base broadly rounded or truncate, lobes 4, about 2 mm. long, slightly unequal, oblong, obtuse or rounded at apex, the whole strongly accrescent in fruit; corolla (color?), persistent after anthesis, 10 to occasionally 13 mm. long, narrowly infundibuliform, lobes 4, rarely 5, about 2 mm. long, broadly ovate, obtuse, glabrous, each lobe strongly veined with several branching veins issuing pinnately from the midrib, which arises prominently and practically unbranched from base of corolla, whole corolla glabrous without; stamens as many as corolla lobes, alternate with them, filaments adnate to corolla tube quite to bases of corolla lobes, free for less than 0.5 mm. of their length, lower one-third of adnate filaments and inner surface of the corolla tube immediately adjacent densely long-tomentose, anthers equally disposed just within the corolla throat, apparently sessile, about 2 mm. long; ovary 2- or rarely 3-carpellate, evidently divided into a broad, fleshy, bright red base and straw-colored, rounded upper half, style about 5 mm. long, never reaching much beyond halfway to corolla throat; ovules 2 in each cell; calyx completely enclosing fruit, strongly accrescent except for fleshy red base 1 mm. deep; berry hard, about 5 mm. long, 4.5 mm. in diameter, one or both sides with an irregular suture or fold; seeds lenticular to arcuate-oblong, about 3 mm. long, 1.5 mm. wide, two in each cell or rarely reduced to one by abortion, seedcoat thick, reticulate.

Lycium Shockleyi seems to have a very local distribution, there being apparently no authenticated records other than the type collection and the one here described, both from Mineral County. No doubt critical examination of material from other Nevada counties and from adjacent California would reveal a much wider range.

A variant of *Quercus dumosa* Nutt. of outstanding character was collected in Santa Barbara County, California, by Dr. Katherine Kinsel. All attempts to identify this plant as a hybrid

failed utterly in the assigning of a second parent, and the relatively prolific fruiting of the specimens further discredited a hybrid origin. In appreciation of Miss Kinsel's excellent collections of California oaks, the author takes pleasure in naming this new variety in her honor.

QUERCUS DUMOSA Nutt. var. *Kinselae* var. nov. Frutex; folia oblonga vel obovata, profunde incisa, lobis utrinque 3-4, dentatis vel integris, supra nitida glabrata, subtus sparse sericeo-pilosa vel tomentosa; glans oblongo-conica, 3 cm. longa, 1-1.5 cm. diametro, basi solum inclusa.

Shrub about 3 m. tall, densely branched; twigs of the year 1-2 mm. in diameter (vigorous shoots 3-4 mm. in diameter and as much as 3 dm. long), at first sparingly or densely soft-stellate, soon glabrate or persistently scurfy; buds acute-ovoid, 2.5-3.5 mm. long, 1.5-2 mm. in diameter, brown, puberulent, stipules awl-like, soon deciduous; leaves rather thin, larger shade leaves very thin and papery, 2-4 (or sometimes 7) cm. long, 1.5-2.5 (or sometimes 4.5) cm. broad, oblong to obovate in outline, rather unequally subcordate, rounded, or cuneate at base, incised half-way to midrib with narrow, rounded sinuses forming 3 or 4 lobes on each side, the lobes pungently 2- or 3- (or several-) toothed near their apices, subclavate or sometimes entire and acute, upper surface dark green, glabrate, shining, with sparse silky pubescence of stellate and simple hairs about midrib basally, lower surface pale, softly puberulent or sparsely pilose especially on the veins and midrib; veins as many as the lobes, branching, passing into the pungent mucronations of the teeth; petiole 2-4 (usually 3) mm. long, densely tomentose with soft-stellate and simple hairs; fruit annual; cups sessile, paired or glomerate, hemispheric, 12-15 mm. in diameter, scales thickened and somewhat warty as in the species; acorns oblong-conic, about 3 cm. long, 1-1.5 cm. in diameter, covered at base only.

CALIFORNIA. Santa Barbara County: Rattlesnake Canyon Road on Skofield Ranch near Santa Barbara, altitude 1,000 feet, October 30, 1938, *K. Kinsel 50* (type, Herbarium of the National Arboretum 43970); collected from the same tree, sterile with much larger leaves of thinner texture, November 12, 1938, *K. Kinsel 51* (Herbarium of the National Arboretum).

Quercus dumosa var. *Kinselae* differs from typical *Q. dumosa* as well as its several varieties in the deeply incised leaves with narrow sinuses, several-toothed lobes, and thin blades. From *Q. lobata* Née it is readily distinguished by its shrubby habit and small leaves with mucronately pungent lobes.

The acorns of this variety markedly resemble those of *Quercus lobata*, and the lobing and pubescence of the leaves also suggests that species. However, if one were to regard this plant as a hybrid between *Q. dumosa* and *Q. lobata*, it would be necessary to account for the fact that the offspring resembles one parent

(*Q. dumosa*) much more closely than the other in habit, characters of the twigs, mucronate lobes and teeth of leaves. Furthermore, the characters most suggestive of *Q. lobata* parentage (i.e., the fruit character and the nature of the leaf pubescence) are both common on other varieties of *Q. dumosa* (e.g., the variety *Alvordiana* Jepson) which could not possibly be related to *Q. lobata*. The strongest argument against the assumption of *Q. lobata* parentage is the existence of several intermediates between the variety here described and typical *Q. dumosa*, while an examination of some fifteen hundred sheets of southern California oaks has not revealed a specimen suggestive of an intermediate between this variety and *Q. lobata*.

Though the variety *Kinselae* is probably of very local distribution in its typical extreme form, forms of *Q. dumosa* strongly suggestive of this variety have been seen from Los Angeles and San Bernardino counties. Among these are the following specimens: Brea Canyon, Los Angeles County, February 26, 1921, *E. A. Spalding* without number (Baker Herbarium, Pomona College 18616); Santa Anita Canyon, San Gabriel Mountains, Los Angeles County, July 4, 1933, *J. A. Ewan* 7852. In both these the leaves are much more coriaceous than in the variety *Kinselae*, and the lobing of the leaves hardly amounts to more than coarse serration. The specimen collected by Ewan is rather densely tawny-tomentose on the leaves beneath.

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A NEW SPECIES OF ERIOGONUM FROM BAJA CALIFORNIA

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Eriogonum Vollmeri sp. nov. Herba perennis erecta 1.5–2.5 m. alta; caulis gracilibus ad basim glabris glaucis, internodiis clavatis paululum inflatis 2–3.5 dm. longis; laminis foliorum ellipticis 2.5–4 cm. longis apicem acutis vel obtusis subter lanatis dense supra glabris tarde; petiolis gracilibus 5–10 cm. longis; stipulis anularibus 2–3-dentatis 2–4 mm. altis; involucris solitariis sessilibus 5–6 mm. longis cylindro-campanulatis leviter 5-dentatis dense lanatis; floribus luteolis 2.9–3.2 mm. altis, segminibus exterioribus oblongo-spathulatis segminibus interioribus linearo-spathulatis; staminibus 9 inclusis basim pubescentibus; fructu triquetro gracili et apicem acuto.

Erect herbaceous perennial 1.5–2.5 m. high, with 2–12 slender, virgate stems from a sturdy woody rootstock; stems glabrous and slightly glaucous near the base, gradually becoming floccose-lanate toward the summit, the lower internodes narrowly clavate, 2.0–3.5 dm. long, 4–6 mm. in diameter at the base, about twice as